How to Identify and Control Dogwood Anthracnose

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Northeastern Area

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Dogwood anthracnose is a disease of flowering and Pacific dogwood (*Cornus florida and C. nuttallii*). Infection of Pacific dogwood has been reported from Washington, Oregon, Idaho, and British Columbia. In the East, infections have been reported on flowering dogwood in Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, and Delaware. Recently, the disease has been detected in Maryland, Virginia, West Virginia, North and South Carolina, Tennessee and Georgia.

An anthracnose fungus, *Discula sp*., has been identified as the causal agent. Infection of dogwoods is favored by cool, wet spring and fall weather, but can occur throughout the growing season. Drought and winter injury weaken trees and increase disease severity. Consecutive years of heavy infection have resulted in extensive mortality in both woodland and ornamental dogwoods.

The origin of this disease is unknown. The fungus may have been introduced or a change in environment may have altered host/parasite relationships, enabling a previously innocuous fungus to become a significant pathogen.

Photo right: *Leaf spots and necrotic blotch.*

Symptoms

Leaves

Leaf symptoms develop first in the lower crown and progress up the tree. Symptoms include tan spots that develop purple rims. Leaves may also have

necrotic veins and leaf margins, and large necrotic blotches. In some cases shot holes appear. Premature abscision of leaves infected in the spring is characteristic of the disease on *C. nuttallii*. On both hosts, leaves that are entirely blighted do not abscise in the fall. Infections often progress down the petioles of blighted leaves into shoots, resulting in cankers.

Photo right: *Non-abscised blighted leaves.*

Twigs

Direct infection of shoots, resulting in tiny cankers, may occur on *C. florida* during spring and fall. Girdling cankers typically develop at leaf nodes, causing twig dieback. On *C. nuttallii*, fall blighting of terminal leaves is common, resulting in death of terminal buds. This reduces spring budbreak and causes *C. nuttallii* to refoliate via axial buds in midsummer. On both hosts, twig dieback is most common in the lower crown following years of extensive spring or fall leaf blighting.

Twig canker developing from node where blighted leaves were attached.

Epicormic Branches

As a result of twig dieback, succulent shoots proliferate on the lower trunk and main branches of affected trees. These branches are very prone to infections which may progress into the main stem.

Photo right: *Heavy epicormic branching.*

Canker at the base of an epicormic branch.

Main Branches and Trunk

Brown, elliptical annual cankers often form at the base of dead branches on *C. florida*. Split bark and swellings often are external indicators of these cankers. Multiple cankers can girdle individual branches or kill the entire tree.

Multiple stem cankers.

Bracts
Bracts may become spotted or blighted if rainy conditions prevail during flowering.

Infected bracts.

Signs

Conidiomata of *Discula sp*. may form on necrotic leaf or bark areas. Masses of white to salmon colored conidia ooze as cirrhi from the reddish to dark brown conidiomata during wet weather. The sexual stage of the fungus is unknown. Abundant conidia for spring infections are produced on fallen and nondehiscent blighted leaves and twigs killed during the previous growing season.

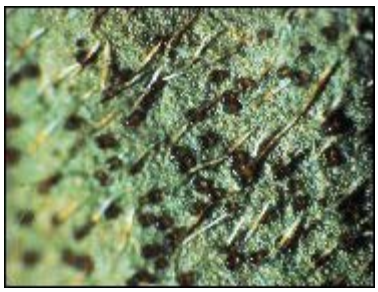

Photo right: *Conidiomata among leaf hairs.*

Masses of conidia excuded from Discula sp. conidia.

conidiomata on dead twig.

Cultural Characteristics

The fungus grows slowly on malt or potato dextrose agar. Colonies are appressed, granular and white, and darken with age. Sporulation of *Discula sp*. in culture is highly variable, and is enhanced by amending media with dogwood tissue or extract. Conidiomata are dark, globose, 150-290 um in diameter. Conidia are hyaline, elliptical to fusiform, 5.5-10 x 1.5-3 um.

Two week old Discula sp. colony on PDA.

Control

Dogwoods receiving good cultural care will be better able to withstand anthracnose during years in which the disease is favored by weather conditions. Maintain the health of dogwoods by watering during periods of drought. Mulching trees can help to reduce watering needs as well as protect trunks from mechanical injury. Avoid overhead watering to minimize the chance for leaf infections. Improve air circulation around trees to help dry foliage and reduce infection.

Effective control is possible only if the disease is detected before extensive dieback occurs. Prune and dispose of diseased twigs and branches to reduce potential sources of inoculum and improve tree appearance. Raking up fallen leaves may be of some benefit. Remove succulent branches as they form to prevent trunk canker formation. Avoid high nitrogen fertilizers which stimulate succulent branching. Trees with poor vigor may be bolstered by applying a balanced fertilizer in early spring.

Chemical
Fungicides should be used only to supplement a cultural control program. Applications of chlorothalonil, mancozeb will protect against leaf infections. Apply 3 or 4 sprays during leaf expansion in the spring, at 10-14 day intervals. If conditions are favorable for disease development later in the growing season, additional fungicide applications may be beneficial.

References

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